

127-25.

SECOND EDITION

OCT 7 '25

The **DONOVAN**

AWNING TYPE
Steel Window
for

**SCHOOLS
HOSPITALS
AND OTHER
BUILDINGS**

ABUNDANT blue
sky light and fresh
air assures the future
health of growing
generations . . . con-
serves the health
and strength of the
nation . . .

Invented and Developed by
John J. Donovan Architect A.I.A.

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TRUSCON STEEL COMPANY

YOUNGSTOWN, OHIO

Warehouses and Branches in all Principal Cities

TRUSCON
STEEL
DONOVAN
AWNING TYPE WINDOWS



BENJAMIN FRANKLIN SCHOOL, YONKERS, N. Y.

Introductory

THE selection of a window for schools brings up the question: "Besides its architectural appearance, how will it influence the health and eyesight of the child?" Many children, although hampered by physical shortcomings, succeed nevertheless, to a much greater degree when conditions in the school-room are made more nearly similar to ideal outdoor conditions.

Dr. Thomas B. Wood, Professor of Hygiene at Columbia University, has stated that twenty-five per cent of the school children of the United States are afflicted with poor eyesight and that their eye troubles are progressive as they proceed through school. In different cities the number of repeaters (annual failures) has been estimated to be from ten to sixteen per cent of total enrollments.

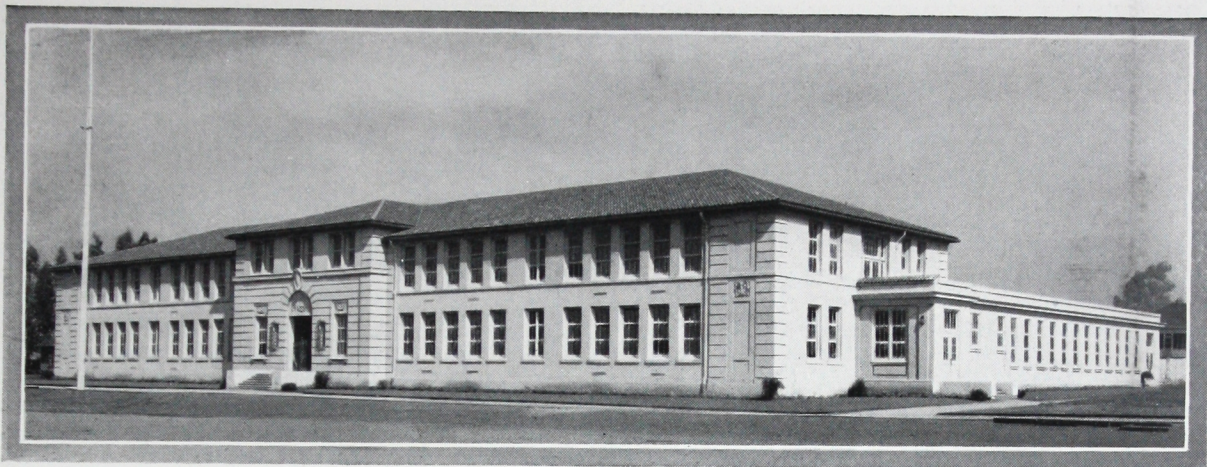
To improve ventilation and air conditions, to increase the daylighting values of window openings and to eliminate the danger of drafts the Truscon-built Donovan Awning Type Window was developed by John J. Donovan, a national authority on school architecture. It is promoting, to an extent hitherto unthought of, the welfare

and success of the normal, as well as the subnormal child.

A moment's reflection will bring out the fact that the benefits of using this window will, in no way, be lessened when applied to hospitals, libraries, recreation buildings, sanitariums or any other type of structure where the conditions of occupancy require special provisions for daylighting and natural ventilation.



The Donovan Awning Type Window has won for itself a considerable following, and is at present an important feature of about a thousand buildings, mostly schools, which have been built within the last six years. Its design in steel is neat and simple resulting in a delicate grace that lends itself to various treatments.



ALEXANDER HAMILTON JUNIOR HIGH SCHOOL, OAKLAND, CALIF.

Truscon-built Donovan Awning Type Window

A DISCUSSION of the Truscon-built Donovan Awning Type Window calls for some consideration of the conditions and developments which produced it. A survey of 31 different schools, covering 216 class rooms, and carried over a period of five school semesters, developed the conclusion that window ventilation with gravity exhaust appears to be the most beneficial system for use in class rooms.

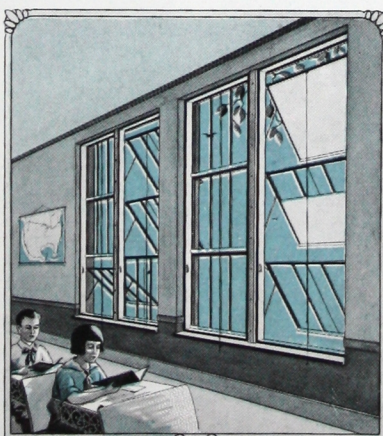
Some well devised and well controlled systems of artificial ventilation were found capable of producing excellent results but certain disadvantages inherent to such systems actually offset the high degree of air change they effect. The commission, which was headed by Dr. C. E. A. Winslow of the Yale School of Medicine, agreed in favor of natural ventilation by windows in combination with gravity exhaust as the generally best and most reliable plan. Air drafts seem to be minimized, permitting the maintenance of a lower temperature in the room and creating a more healthful condition.

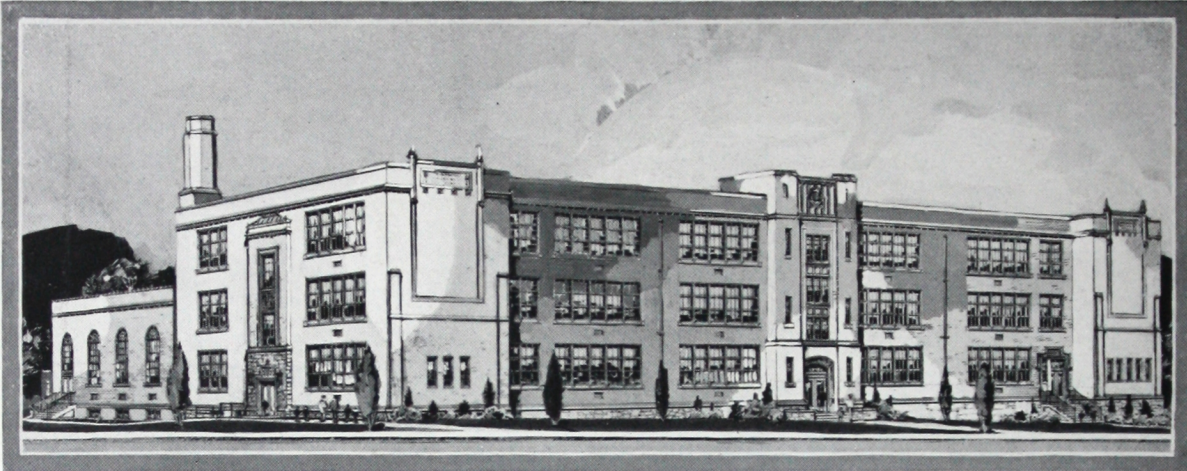
It is, of course, altogether plausible to suppose that there may be devised artificial systems which either

independently or in combination with window ventilation will embody improvements on even the most up-to-date methods. Systems now in vogue require that, regardless of the weather, windows must be kept closed.

In most localities practically 50% of the school time is bright and sunshiny, favorable to having the windows well open. The present figure of 6 to 8% of the total cost of the structure for plenum systems represents an item which, in the face of the findings (summarized above), justifies serious consideration of the window and gravity systems, whose costs of maintenance are negligible and operation costs nil.

In this description of the Truscon-built Donovan





ELIAS BROOKINGS SCHOOL, SPRINGFIELD, MASS.

Awning Type Window its superior advantages for facilitating natural ventilation will readily suggest themselves. In addition, it will be seen that proper shading presents no obstacle to effective ventilating and allows close adherence to the usual state regulations requiring that the window area be 20% of that of the floor.

The frame opening of the Truscon-built Donovan Awning Type Window is divided into three sashes. These open outward in parallel and do not protrude into the room. Thus, in this design the ventilating possibilities of each window are really 100% of the window opening and are controllable to any degree. Horizontal and downward drafts are

prevented and all air currents are deflected upward. The awning-like operation of the sash protects the interior against rain too, so that ordinary changes of weather do not interfere with the proper ventilation of the class room. Nor does shading impede ventilation, because individual shades are attached to each separate sash and the shade and sash operate as a unit.

So, in the Truscon-built Donovan Awning Type Window, natural ventilation and daylighting are entirely independent and the effectiveness of the one is not at all contingent upon conditions influencing the other. The shades are attached to the lower section of each sash and are operated upward. Most state



SUN ROOM IN HOME OF HOWARD RIEGEL, NAZARETH, PA.





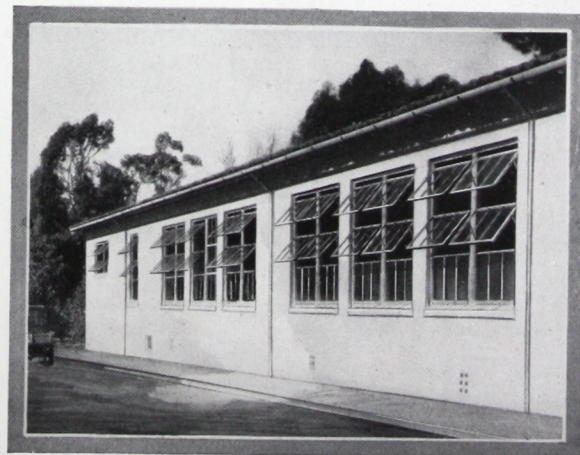
WARWICK SCHOOL, APANAUG, RHODE ISLAND

laws call for a total window area 20% of the floor size. Compliance to the word of the law with any style window is simple. Where ordinary windows and their usual shading methods are installed, keeping faith with the beneficent spirit of the law is impossible. With the Donovan Window the amount of sky-reflected-light available when the windows are open is increased greatly—because at many hours of the day the position of the sun is such that drawing the shades of each sash only slightly, serves to completely exclude direct rays. When the sun is high and the upper ventilators are open, drawing only the uppermost shade serves to exclude the sunlight but

obstructs to the least degree the admission of sky light that is so desirable.

Translucent shades are most popular for use with Truscon-built Donovan Awning Type Windows because they minimize the darkening effect of shading. When the windows are opened and the shades are drawn, sunlight is reflected to the ceiling, thereby adding greatly to the brightness of the room. This is the most agreeable kind of light—diffused indirect daylight. Each sash is self-balanced and a child can easily open or close the window. Operation is controlled by the bottom sash and pushing outward at its lower rail opens the upper sashes simultaneously. This does away with the need of a window

[CONTINUED ON PAGE EIGHT]



AVENUE GRAMMAR SCHOOL, VENTURA, CALIF.

A Few Distinguishing Features

¶ Simple in construction, yet strong and perfectly balanced that a child can operate in one simple motion. ¶ It eliminates as well as heavy hand-lifting and binding. ¶ Can be cleaned easily from inside. ¶ May be used as an awning yet affording perfect sun protection when attached separately to each sash. ¶ Rooms and more healthful living conditions because it is made of steel areas of glass harmonizing with the stocks of windows in suitable

*The Donovan Awning Type Window
Truscon Steel Company,*

Information about Donovan Awning Type Windows for wood sash may be secured from the Truscon Steel Company, 1916 Broadway,

North East School,
Pasadena, Cal.

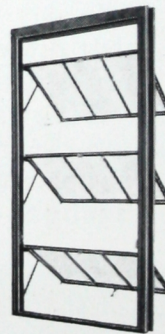
Conaty Memorial,
Los Angeles, Cal.

Rockridge School,
Oakland, Cal.

McClymonds High
School, (Printing Room)
Oakland, Cal.

McKinley School,
Pasadena, Cal.

STANDARD UNITS FOR ECONOMY



Complete Control

Each of these combinations has its own particular advantages and while the variations of ventilation control are almost innumerable, operation is simple and

UNITS MAY BE COMBINED

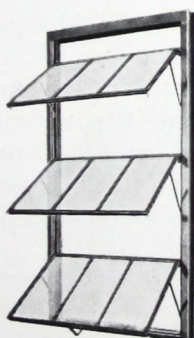
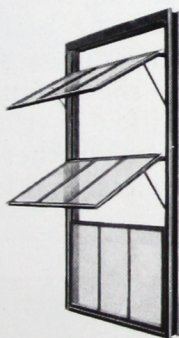
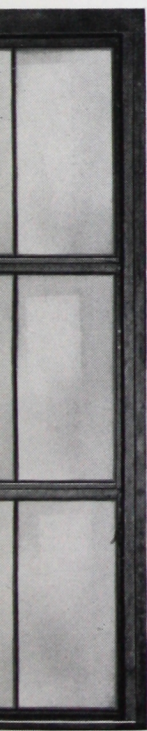
ing Features

ong and durable. ¶ It is so
can open or close all sashes
minates the window-pole as
pulling. ¶ No sticking or
sily and quickly from the
ning, admitting light and air,
ion, because the shades are
¶ Assures better ventilated
conditions. ¶ Fire-resisting
steel. ¶ Permits use of large
h the architectural design.
standard sizes are available.

y is manufactured in steel by the
Youngstown, Ohio

ing Type Window Fixtures
from the Universal Sales
Oakland, California.

MY AND DELIVERY SERVICE



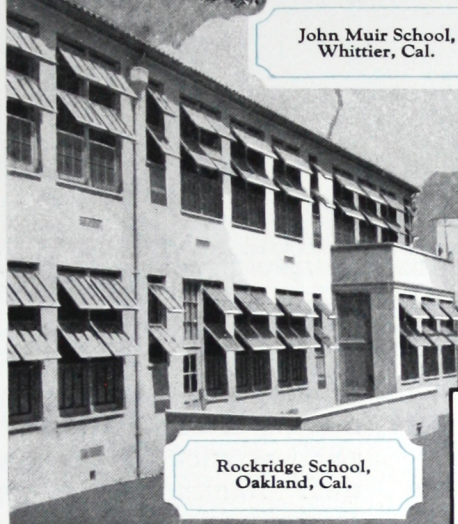
Perfect Protection
equally easy for
securing the dif-
ferent effects. Moving
parts do not show
when ventilators are
closed and no part
ever protrudes into
the room.



FOR LARGE OPENINGS



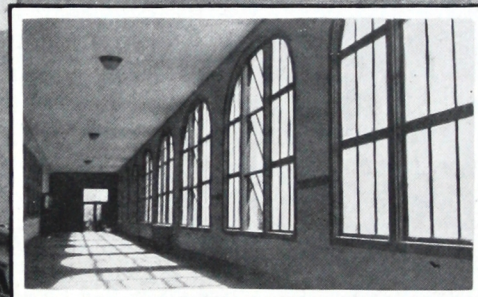
John Muir School,
Whittier, Cal.



Rockridge School,
Oakland, Cal.



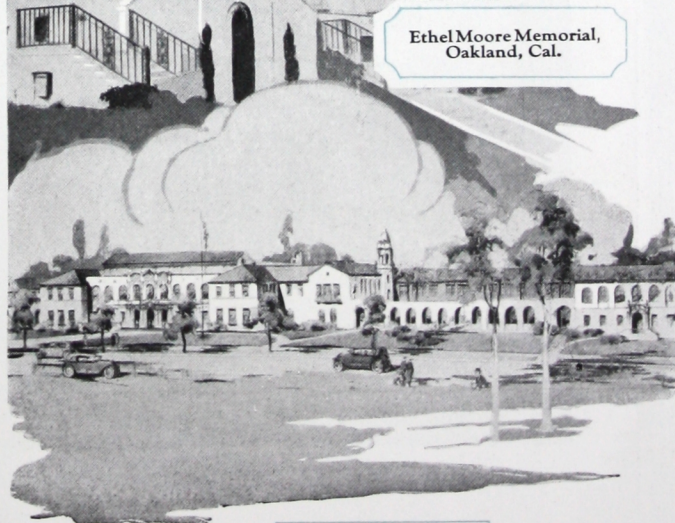
Lewiston Hotel,
Lewiston, Idaho



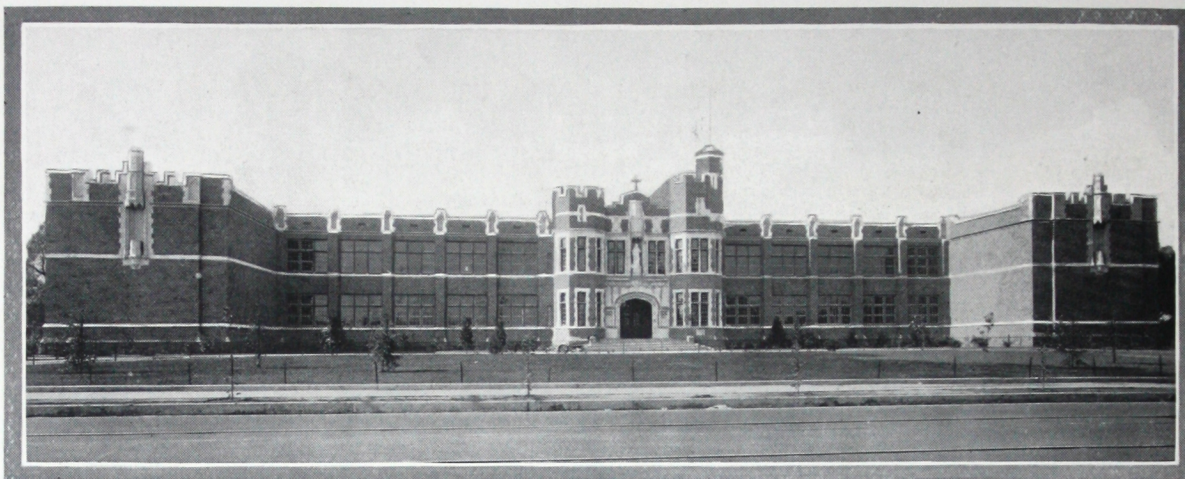
University High
School, (Corridor)
Oakland, Cal.



Ethel Moore Memorial,
Oakland, Cal.



Union High School,
Olandale, Cal.



CONATY MEMORIAL, LOS ANGELES, CALIF.

pole. By the mere adjustment of a special disengaging device, the bottom sash may be operated independently and the upper sashes left open or closed as desired. Typical procedure leaves the bottom ventilator closed in cold weather. Warm air rising from radiators, just below the window stool, mixes with the cool fresh air as it circulates over the children's heads, making the air they breathe always fresh but of a temperature suitable to their physical inactivity. Sashes may be opened to a horizontal position so that either side can be easily reached for cleaning from within the room.

Permanent ease of operation is assured by the strong and rigid construction of

Truscon-built Donovan Awning Type Windows. They are built of copper bearing steel and will not sag or warp, swell or stick, or get loose and rattle in their frames. This construction also assures permanent fit for with it distortions, from any cause whatever, are eliminated as possible sources of trouble in operation.

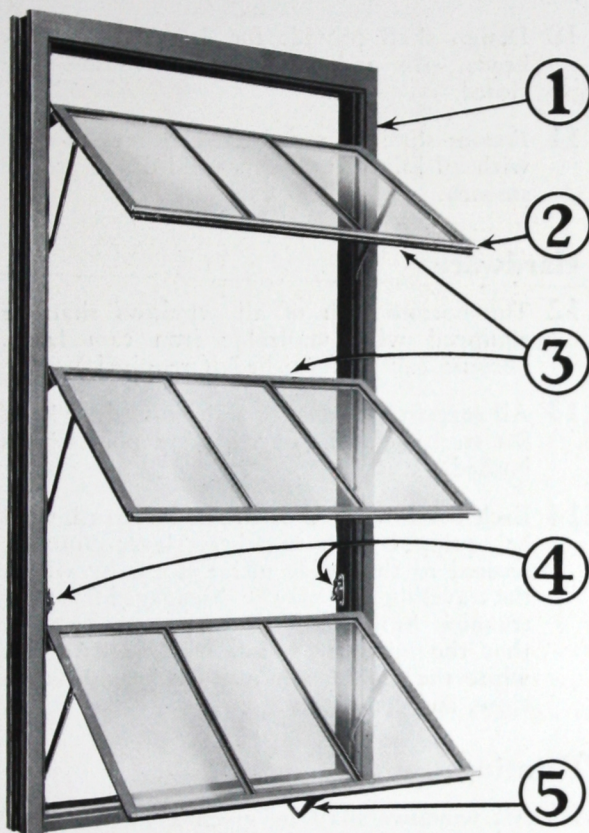
The same features of construction which result in ease of operation are the basis of permanent weathertightness; the careful fit, resulting naturally from the design, continues throughout the life of the window itself. Double contact weathering on all sides of each sash offers double protection against air leaks or rain.



SUN PORCH, RESIDENCE OF JNO. A. MILLER, EASTON, PA.



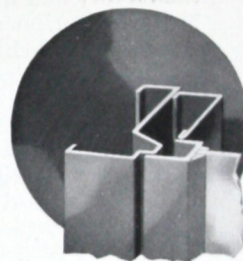
Important Special Features of the Truscon-built Donovan Awning Type Window



THE successful application of a design such as that of the Donovan window is absolutely dependent on precise construction. Strength, rigidity, careful fits and smooth operation make practical the provisions of this window for greater service.

Jamb Section

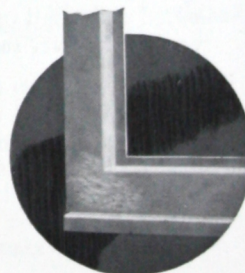
THE jamb is an integral part of the frame, which is anchored in the wall masonry. No trim is required with this window for the reveal is of plaster and is finished off even with the head and jambs.



1 Jamb is rigid and stiff.

Welded Corners

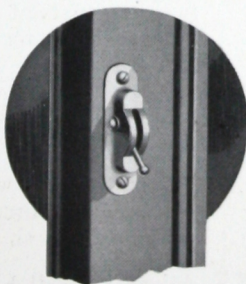
STRENGTH and rigidity are secured in the frames by welding the corners. When they are ground smooth and painted the frame presents a smooth continuous appearance as being of one piece and by this construction is really much more solid than any practically obtained one piece design could be.



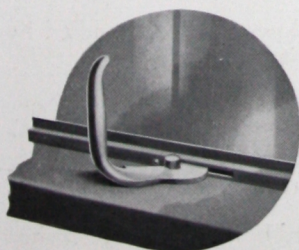
2 Greater strength with welded corners.

Lever Clutch

THE lever clutches on each jamb are simple to operate and properly inconspicuous. A light pressure with the thumbs engages or disengages the traveling rods for operating all or just the bottom ventilator.



4 Convenient lever clutch.



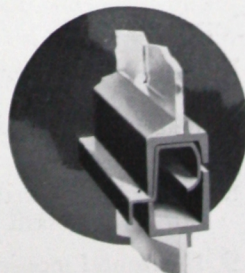
5 Cam latch; an artistic handle and latch.

Cam Latch

THE cam latch is an artistic execution of the design that has been found eminently serviceable for this type of window. Malleable iron is the standard metal but bronze can be furnished.

Double Contact Weathering

DOUBLE contact weathering is provided at head, sill, jambs and meeting rails. Also, the meeting rails of the ventilators overlap, the section of the upper ventilator functioning as a hood to exclude the rain at point of contact.



3 Meeting rails overlap.

Specifications

Truscon-built Donovan Awning Type Window

General

- 1 Unless otherwise shown or specified, all window openings shown on the drawings shall be equipped with the Donovan Awning Type Window as manufactured by the Truscon Steel Company of Youngstown, Ohio. The manufacturer shall install the frames and sash complete, equipped with all necessary hardware. Frames and sash shall be assembled in the factory and shipped ready for installation. No substitution shall be made without first having the architect's approval in writing.

Material

- 2 **Frames.** All frames shall be cold rolled, full pickled, re-annealed copper alloy steel of No. 13 U. S. Standard Gauge.
- 3 **Sash.** All sash members shall be constructed from hot-rolled, special billet copper alloy steel.

Operation

- 4 Sash shall be operated by pushing out on the lower rail of the bottom sash and all super posed sash shall open and close simultaneously with the lower sash.
- 5 The construction of the component parts shall be such that not only shall all sash open and close simultaneously, but so arranged that the upper sash, or sashes, may be left open while the bottom sash is closed. To open and close the sash shall be by means of the lower sash acting as the manual of operation.
- 6 When the sash are closed, all parts, including the trunnion hinges, arms and rods, shall be concealed (back of the inside stop). No mechanism, such as rods, arms or hinges, shall be exposed to view with the sash in this position.

Construction

- 7 The outside members of the sash shall be assembled from a heavy rolled channel section with mortise and tenon joints riveted and welded.
- 8 Muntin bars shall be mortised and riveted into outside sash members.
- 9 Horizontal meeting rails shall be designed to over-lap and form a line contact when closed.

- 10 Design shall provide for double contact at heads, sills and jambs when windows are closed.

- 11 Frames shall be constructed of pressed steel with all joints at corners welded and ground smooth.

Hardware

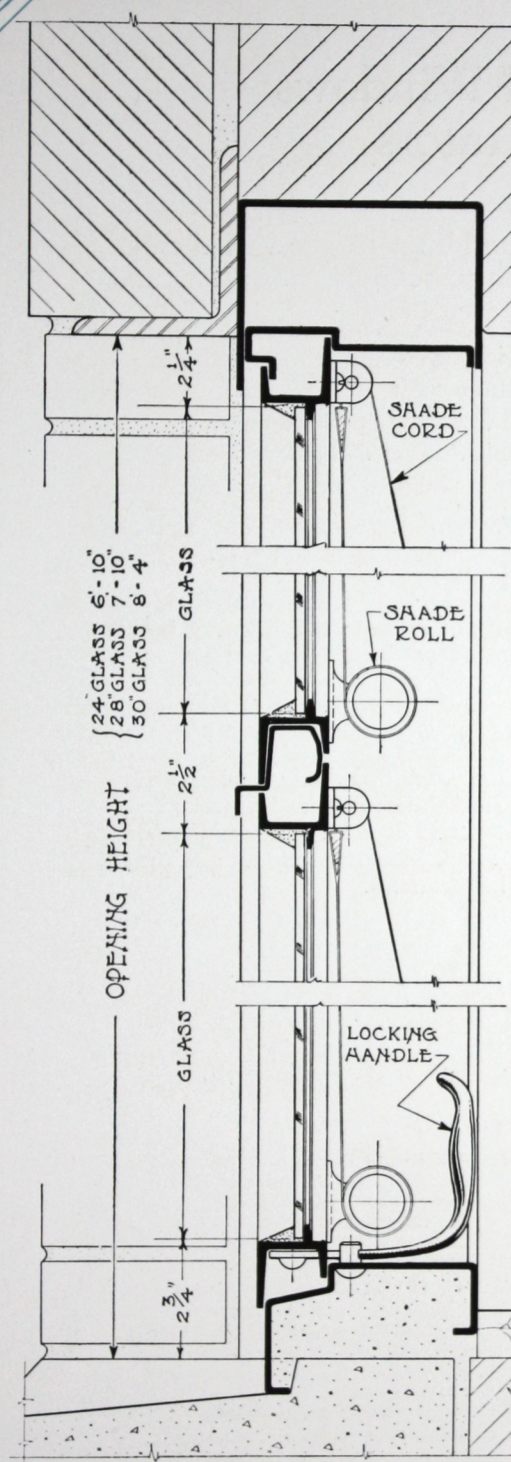
- 12 The bottom sash of all windows shall be equipped with malleable iron cam latch. (Bronze can be furnished if required.)
- 13 All supporting arms for sash units shall be of flat steel sherardized with pivot points brass bushed.
- 14 Each window frame of two or three sash shall be equipped with two brass lever clutches, secured to the inside metal stops, by which the traveling rods may be disengaged from the trunnion hinge pins of the bottom sash, so that the upper two sash may be left open while the lower sash may be brought to a close, and conversely.

Painting

- 15 All windows shall be given a shop coat of protective paint before shipment. The remaining coats of paint will be furnished under separate contract by the painting contractor.

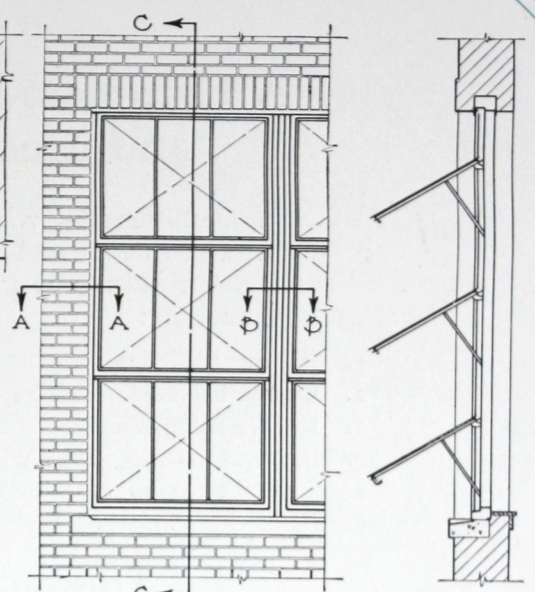
Glazing and Erection

- 16 Glass shall be bed and face puttied with Truscon metal window putty and held in place with Truscon copper clad glazing clips. All windows shall be outside glazed.
- 17 All glass shall be furnished and glazing performed by the glazing contractor.
- 18 The erection of windows shall be handled by the manufacturer of same.
- 19 After the windows have been set in masonry and properly built in, the joints between the frame and the masonry shall be carefully pointed up by the mason contractor.
- 20 Shade bracket and cord holder will be furnished by the Sash Manufacturer and holes punched in sash for patching same.



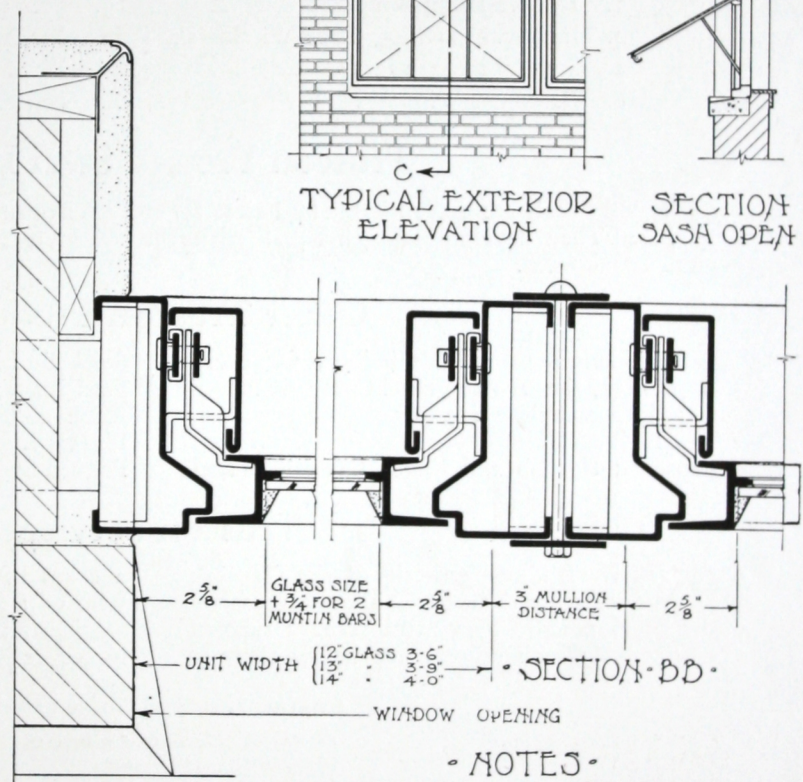
SECTION C-C

SCALE 3"=1'-0"



TYPICAL EXTERIOR ELEVATION

SECTION SASH OPEN



SECTION A-A

SECTION B-B

DIMENSIONS OF STANDARD UNITS			
UNIT WIDTH	OPENING HEIGHT	GLASS SIZE	GLASS AREA
3'-6"	6'-10"	12' x 24'	18
3'-6"	7'-10"	12' x 28'	21
3'-6"	8'-4"	12' x 30'	22.5
3'-9"	6'-10"	13' x 24'	19.5
3'-9"	7'-10"	13' x 28'	22.75
3'-9"	8'-4"	13' x 30'	24.37
4'-0"	6'-10"	14' x 24'	21
4'-0"	7'-10"	14' x 28'	24.50
4'-0"	8'-4"	14' x 30'	26.25

NOTES

SUM OF WIDTHS OF GLASS (IN SASH 3 LIGHTS WIDE) PLUS 6" GIVES UNIT WIDTH.
 HEIGHT OF GLASS (SUM OF GLASS HEIGHTS OF UPPER MIDDLE AND LOWER SASH) PLUS 10" GIVES OPENING HEIGHT.
 FOR UNITS 2 SASH HIGH HEIGHT OF GLASS (SUM OF UPPER AND LOWER SASH) PLUS 7 1/2" GIVES UNIT OPENING HEIGHT.
 MUNTIN BARS MAY BE OMITTED, ADDED OR REARRANGED, BUT THE OVERALL DIMENSION MUST BE MAINTAINED (3/8" ADDED TO GLASS SIZE FOR EACH MUNTIN OMITTED OR 3/8" DEDUCTED FROM GLASS SIZE FOR EACH MUNTIN ADDED).
 UPPER TWO SASH ARE OPENED TO ANY POSITION OR CLOSED BY MOVING THE BOTTOM SASH OUT OR IN.
 UPPER TWO SASH MAY BE CLOSED AND BOTTOM SASH OPENED INDEPENDENTLY.

- AWNING TYPE-VENTILATORS TO OPEN OUT -

DONOVAN WINDOWS

TRUSCON STEEL COMPANY

YOUNGSTOWN, OHIO



A Complete Line of Steel Windows and Mechanical Operators

TRUSCON manufactures windows for buildings of every description from residences, apartments and monumental office buildings to the varied types required throughout industrial plants, public buildings, schools, hospitals, and power houses, such as:

1. Projected Windows
2. Counterbalanced Windows
3. Double-Hung Windows
4. Donovan Awning Type Windows
5. Standard Casements
6. Basement Windows
7. Pivoted Sash
8. Continuous Sash
9. Pressed Steel and Standard Frames
10. Mechanical Operators for Steel Windows, manual or electrical controls.

Truscon Pressed Steel Lintels

THESE lintels are made in standard sizes for use over openings of average size in every building. They develop strength equal with the old style structural steel angle and are much more economical.

Other Truscon Products

IN addition to steel windows for every purpose, the Truscon Steel Company manufactures a complete line of building products. This includes Reinforcing Steel for all building purposes; Hy-Rib and Metal Lath; Standard

Steel Buildings and Standard Steel Trusses; Steel Joists; Steel Poles; Standard Lintels; Wire Mesh and Concrete Road Products; Foundry Flasks; Lift Truck Platforms; Boxes and other Pressed Steel Specialties.

Truscon Service

THE tremendous growth of the Truscon organization brought about necessarily the development of an extraordinary type of service. At each office listed below there is

a corps of men of wide building experience who will gladly tell you more about Truscon service and help you to benefit by it. Consult us before building, it costs you nothing.

Engineering and Sales Offices:

ALBANY, N. Y., 100 State Street
ATLANTA, GA., Cooper Building
BALTIMORE, MD., 406 Builders Exchange
BIRMINGHAM, ALA., 513 N. 21st Street
BOSTON, MASS., 147 Summer St., No. 9
BUFFALO, N. Y., 716 Genesee Building
CASPER, WYO., c/o Independent Supply Co.
CHICAGO, ILL., 165 E. Erie Street
CINCINNATI, O., 617 Provident Bank Building
CLEVELAND, OHIO, 4614 Prospect Avenue
COLUMBUS, O., 1000-04 Ferris Building
DALLAS, TEX., 115 Field Street
DAYTON, O., 110 S. Wayne Street
DENVER, COL., 2941 Walnut Street
DES MOINES, IA., 417 Hubbell Building
DETROIT, MICH., 615 Wayne Street
EL PASO, TEX., 1701 Olive Street
ERIE, PA., 801 Palace Bldg. Building

FT. WAYNE, IND., care Old Fort Supply Co.
HARRISBURG, 3025 Derry Street
HOUSTON, TEX., 312 Chronicle Building
INDIANAPOLIS, IND., 241 E. Ohio Street
JACKSONVILLE, FLA., 215 Professional Building
KANSAS CITY, MO., 611 Bryant Building
LOS ANGELES, CALIF., 1480 E. 4th Street
LOUISVILLE, KY., 621 Marion E. Taylor Building
MEMPHIS, TENN., Builders Exchange
MIAMI, FLA., 211 Columbia Building
MILWAUKEE, WIS., 1200 Straus Building
MINNEAPOLIS, Metropolitan Bank Building
NASHVILLE, TENN., 217 Vendome Building
NEWARK, N. J., 38 Clinton Street
NEW HAVEN, CONN., 42 Church Street
NEW ORLEANS, 605 Carondelet Building
NEW YORK, N. Y., 31 Union Square
NORFOLK, VA., 521-9 Dickson Building

OAKLAND, CALIF., Rm. 21, 357 12th Street
OKLAHOMA CITY, 319 Magnolia Building
OMAHA, NEB., 402 Arthur Building
PHILADELPHIA, PA., 1505 Race Street
PITTSBURGH, PA., 2541 Oliver Building
PORTLAND, ORE., Thompson and Kirby Streets
PROVIDENCE, R. I., 146 Westminster Street
ROSWELL, N. M., County Engineer's Office
ST. LOUIS, MO., 1637 Syndicate Trust Building
SALT LAKE CITY, 422 McIntyre Building
SAN ANTONIO, TEX., 908 Travis Building
SAN FRANCISCO, 709 Mission Street
SEATTLE, WASH., 825 Seaboard Building
SPRINGFIELD, MASS., 476 Main Street
SYRACUSE, N. Y., 440 Gurney Building
TAMPA, FLA., 19 Petteway Building
TOLEDO, OHIO, 130 Summit Street
TULSA, OKLA., 510 Mayo Building
WASHINGTON, D. C., 424 Transportation Bldg.

FOREIGN TRADE DEPT., 90 West St., NEW YORK CITY
RAILROAD DEPT., 165 East Erie Street, CHICAGO, ILLINOIS
TRUSSED CONCRETE STEEL COMPANY OF CANADA, Limited, WALKERVILLE, ONTARIO

Home Office and Factory:
YOUNGSTOWN, OHIO, U. S. A.

